

## A Discussion of the National Flood Insurance Program

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### Key Points

- There is a large flood insurance gap in the United States, with many people exposed to flood risk not covered by flood insurance.
- The 100-year floodplain boundary, which is central to pricing and regulation under the National Flood Insurance Program, may create a false sense that outside the boundary is “safe” and that all parts within it are equally risky.
- Property-specific risk information and pricing would be an improvement to the current coarser pricing structure and broad flood risk zones.
- Information on future flood risk is needed for home purchasers, to better regulate new development, and to site new infrastructure, particularly for coastal communities where flood risk is likely increasing. Such information could be provided in non-regulatory maps.
- As premium discounts are phased out for structures built before flood maps, the riskiest properties will begin to face high rates. Greater resources for mitigating these properties are merited, as is a program to assist low-income policyholders.
- Grandfathering of lower-risk rates will become increasingly unsustainable and mask the true risk. Consideration should be given to making it a slow glide path to risk based rates and not a permanent discount.

### Background

The National Flood Insurance Program (NFIP), housed in the Federal Emergency Management Agency (FEMA), has been providing flood insurance to residents of participating communities for almost 50 years. It was created in 1968 as a partnership with local

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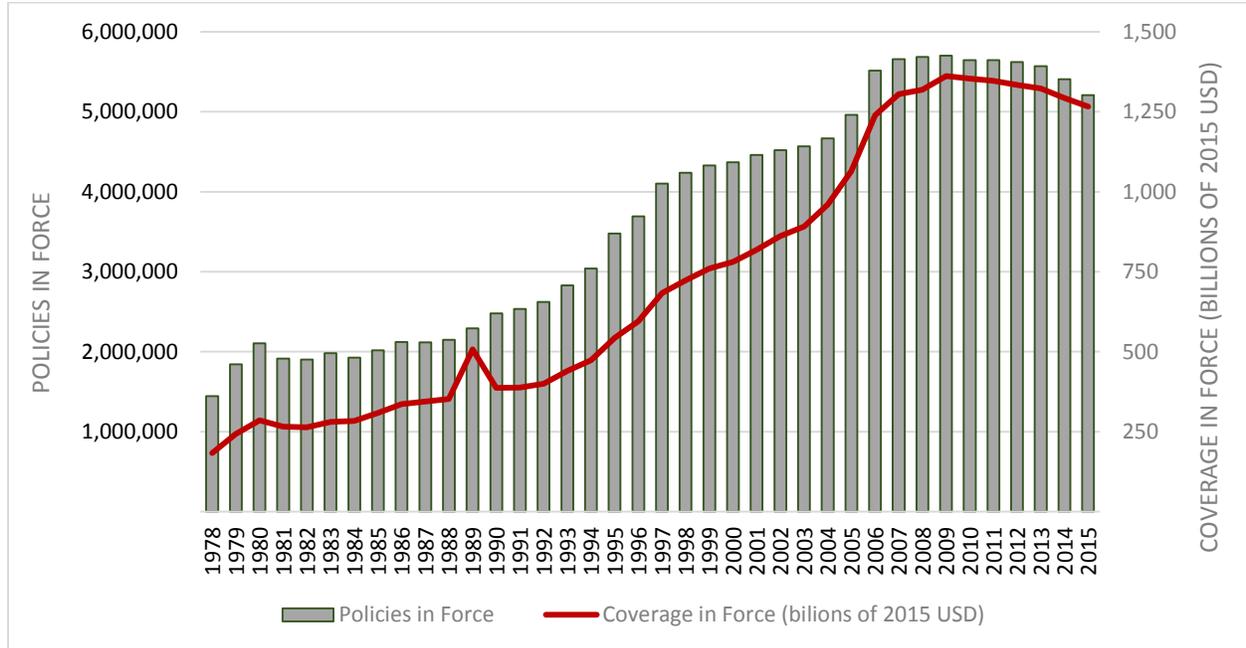
governments. Communities voluntarily join the NFIP, adopting minimum development regulations governing the 1 percent annual chance floodplain. Once adopted, residents become eligible to purchase a flood insurance policy through the program. As of August 2016, there were over 5 million policies in force nationwide, representing \$1.24 trillion in coverage.

The NFIP has always been broader than just an insurance program. In addition to providing insurance, the program maps flood hazards and includes a series of regulations, grants, and incentive programs for household- and community-level investments in flood risk reduction. Three program goals are usually articulated: risk identification and mapping, encouraging floodplain management, and providing flood insurance. These multiple goals inform all aspects of the program, including pricing.

### Demand for Flood Insurance

In 1973, Congress made flood insurance mandatory for property owners in a mapped 100-year floodplain (referred to as a Special Flood Hazard Area, or SFHA) with a loan from federally regulated lenders. Since that time, the number of policies has grown steadily, reaching a high point in 2009. Roughly 95 percent of policies in the program are residential, with 68 percent of those being single-family residences. Over the last several years, however, the number of policies in force has been declining, as seen in Figure 1. The reasons for this are not fully understood. Pricing changes adopted in 2012 and 2014 may play a role, but the decline started earlier.

**FIGURE 1. POLICIES AND COVERAGE IN FORCE BY YEAR**



*Produced by the author with data from FEMA.*

NFIP policies are not distributed evenly around the country. Roughly 35 percent of all policies are in the state of Florida and another 12 percent are in Texas. Louisiana comes in third at almost 9 percent of all policies, California fourth at almost 6 percent, and New Jersey fifth at just over 4.5 percent. The top five states account for 66.5 percent of all policies in the program.

Overall take-up rates also vary substantially around the country—they are much higher in coastal areas than inland. Several studies estimate take-up to be roughly 50 percent in SFHAs and much lower outside them. There is thus a substantial flood insurance gap in the United States, with many people exposed to flood risk not covered by flood insurance.

### **Risk Modeling and Risk Communication**

FEMA maps the flood hazard in participating communities on Flood Insurance Rate Maps (FIRMs). These form the basis of the NFIP's risk modeling and risk communication efforts. FIRMs designate different flood risk zones. These include two zones in SFHA: the V zone, which is subject to breaking waves of at least 3 feet, and the A zone, which is not. Outside the SFHA is the X zone. FIRMs generally differentiate the 500-year floodplain and beyond it.

Because the SFHA is the basis of many NFIP regulations and requirements, a large focus of mapping is on identifying the 1 percent annual chance flood line or SFHA boundary. Property owners in the SFHA with a loan from a federally backed or regulated lender are required to purchase flood insurance and lenders are required to inform them if the property is in the SFHA. Participating communities must adopt minimum floodplain regulations in the SFHA. Pricing is also different inside and outside the SFHA. The SFHA boundary is thus central to much of the NFIP as currently structured—as such, a disproportionate amount of mapping effort goes into its determination.

There is concern is that the SFHA boundary creates a false belief that flood risk changes abruptly at the line and that those inside the SFHA are at risk and those outside are safe. Floods can—and routinely do—occur outside the SFHA. The boundary also masks the fact that flood risk varies throughout the SFHA; some parts of the SFHA are riskier than others. FEMA's Technical Mapping Advisory Committee has suggested that the agency transition away from identifying the 1 percent annual chance floodplain to property-specific flood risk assessment to provide better risk information and better pricing based on more accurate information. This change, however, would require an overhaul of current practice, involving substantial time and resources. Still, it is a laudable long-term goal for the program.

FIRMs, given their purpose, are a snapshot of today's flood hazard in a community. They are not an indication of flood risk decades into the future, which might be needed to make development and land use decisions as well as site infrastructure. Several studies have suggested that in many areas, particularly coastal communities, flood risk is likely increasing over time. FEMA, with appropriations from Congress, could produce non-regulatory maps that project future flood risk due to increased development, sea-level rise, and changing storm patterns. These would not be used for pricing but for development decisions and to inform those purchasing property about how risks may evolve during ownership.

### **NFIP Premiums**

In 2016, the median premium across all single-family policies was \$512 and the mean was \$871. The 99th percentile premium was \$4,540.<sup>1</sup> These statistics mask variations in

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<sup>1</sup> Thank you to Mitchell Waldner at FEMA for supplying this information.

premiums across zones, types of homes, and rating classes. A little over 80 percent of policies in the program are charged what FEMA refers to as full-risk rates. These are based on modeling and vary by zone and aspects of the property, such as basement type. There is no cost of capital (or private sector opportunity cost of using capital) in NFIP rates.<sup>2</sup> NFIP rates are not set based on a modeling of the aggregate risk of the entire portfolio and are not set to meet a solvency target. Within the SFHA, rates vary substantially according to elevation of the home relative to the base flood elevation. In 2016, for all policies in the A zone, the median premium was \$890 and the mean was \$1,432. In the V zone, due to the greater damage from waves, the median premium was \$4,307 and the mean was \$4,759. However, only roughly 1 percent of all policies in force nationwide are in the V zone.

The NFIP classifies the first \$60,000 of building coverage for single-family homes (\$175,000 for businesses) as the “basic limit” and charges higher rates for coverage under this amount, since losses are more likely to occur in this range. The basic limit threshold, however, is a fixed dollar value and is not a percentage of the structure value. As such, this makes insurance more expensive for lower valued homes and is a perverse cross-subsidy from lower valued to higher valued structures. This could be corrected by making the threshold a percentage of the value of the structure. There is precedent, in that V zone rates are based on the insurance purchased as a percentage of the replacement cost.

Outside the SFHA, there are two rate classes. The first is the X zone rate, which is the same for properties in the 500-year floodplain as well as beyond it. The second is a Preferred Risk Policy (PRP), which is a lower premium for homes with a minimal loss history. The majority of policies in force outside the SFHA are PRPs. The annual premium for a PRP policy for the maximum allowable building and contents coverage (\$250,000 and \$100,000 respectively) is only \$499. Premiums outside the SFHA are not based on the elevation of the property relative to base flood elevation (BFE), or estimated height of waters in a 100-year flood.

Historically, properties built before FEMA had mapped flood risk in a community (referred to as pre-FIRM) were given a discounted rate. Between 15 percent and 20 percent of NFIP policyholders still receive this discounted premium. These properties, however, are riskier and sustain higher claims than other properties. Under 2012 and 2014 legislation, pre-FIRM discounts are being phased out for all policyholders. For single family residences, the premium increase must be a minimum of 5 percent but cannot exceed 18 percent per year. Non-primary residences, businesses, severe repetitive loss properties, and properties substantially damaged or improved (meaning over 50 percent of the structure’s value) will increase at 25 percent per year until they reach full-risk premiums. Full-risk rates, however, are based on elevation. FEMA will thus keep increasing rates until a property owner submits an elevation certificate to allow for post-FIRM pricing.

Note that for properties at or above BFE, post-FIRM rates, which are based on elevation, should be lower than pre-FIRM rates. For properties below BFE, however, pre-FIRM discounts

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<sup>2</sup> The Homeowners Flood Insurance Affordability Act of 2014 imposed a \$25 fee on all residential policies and a \$250 fee on nonresidential policies to help offset the costs of reinstating other classes of lower rates. It also required an assessment to help build a reserve fund (currently set at 15%).

can save homeowners thousands of dollars annually. Since this is the case, it is likely that most properties currently receiving pre-FIRM rates are below BFE and their full-risk rates may be quite high. This raises an ongoing question about the affordability of flood insurance. For risky pre-FIRM structures, mitigation assistance could help make insurance affordable and reduce damages from the next flood.

There is also concern about low-income families that may be financially burdened by flood insurance but are at risk and need the financial protection that insurance provides. A recent National Academy of Sciences committee explored the design of assistance programs for these households. FEMA will be issuing a report on such a program in the coming months. Finally, a separate issue, but one commonly wrapped in the affordability debate, is whether residents of high-risk areas view flood insurance as “worth it”—whether or not they are financially burdened by it. This raises broader issues of risk communication and understanding of the nature and role of insurance.

In addition to pre-FIRM properties, another group receives discounted premiums—grandfathered policies. Grandfathered properties are those that were built in compliance with the hazard map in effect at the time of construction or that have maintained continuous coverage on their property beginning before a map update. These properties are given the lower rate from the original map if a new map indicates they are now at higher risk, and should thus be paying a higher premium. Zone grandfathering is the most common form of rate grandfathering and it occurs when a policyholder was previously classified as being outside the SFHA, but with the revised map, is included in the SFHA. Zone grandfathering can also apply if a property is moved from an A zone to a V zone. Elevation grandfathering occurs when a new map increases the elevation of the BFE. For instance, if a property was two feet above BFE on the old map but is now one foot below, grandfathering lets the property owner keep the rate associated with being two feet above. This discount provided to grandfathered properties is offset by higher rates on other policyholders in the zone. With flood risk increasing over time in many locations, grandfathering will become increasingly unsustainable. As maps are updated, the number of properties paying rates not commensurate with the risk will grow—both for those properties underpaying due to the grandfathering discount and those in the zone that are overpaying to support grandfathering financially. Consideration should be given to changing grandfathering from being permanent to a slow ramp up premiums to reflect current risk.

## **Covering Catastrophic Losses**

The NFIP has amassed a huge debt, currently \$23 billion, with no way to repay it in the foreseeable future. The program has never had a financial architecture in place to be able to cover claims from severe loss years and was never capitalized by Congress. It has always had borrowing authority from the US Treasury, but there was no consideration of how this would be repaid following a catastrophic year. In 2012 and 2014, Congress took steps to rectify this, but there was little thought to how various financing mechanisms would work together. First, Congress authorized the creation of a reserve fund and legislated that FEMA maintain an amount in the reserve equal to 1 percent of total exposure. As of April 2016, FEMA is charging an assessment of 15 percent of the premium to build up this fund. By the end of fiscal year 2016, FEMA projected to have almost \$1.75 billion in the reserve fund.

Second, Congress authorized the purchase of reinsurance. In 2016, FEMA purchased a very small amount of reinsurance as a pilot, transferring \$1 million in risk to Transatlantic Re, Swiss Re, and Munich Re (Guy Carpenter provided brokerage assistance). The NFIP will make a larger placement in 2017. Using reinsurance to fully protect the program, however, would be quite costly and it is not clear where the funding would come from as further premium hikes seem politically unpalatable. An analysis of the costs and benefits of different financing options for different layers of loss should be conducted. Congress should also consider setting a high loss threshold above which the Treasury would cover claims in the program.

## **Incentives for Risk Reduction**

The NFIP has several carrots and sticks for encouraging policyholders and communities to invest in flood mitigation. At the household level, the NFIP offers premium discounts for elevating a property above the BFE. Elevating homes is very expensive, however, and homeowners may need grants or loans to make it financially feasible. It also may not be cost-effective until or unless a home is substantially damaged by a flood and rebuilding is underway. There are also some properties for which elevation will just not be possible, such as row homes. There is interest among many stakeholders in the NFIP in adopting premium credits for a broader array of mitigation measures, but FEMA actuaries need verified information on how potential measures reduce claims in order to price accurately.

FEMA offers some grant funds for mitigation. The Flood Mitigation Assistance program was created in 1994 to assist NFIP policyholders in undertaking mitigation measures such as elevation, flood-proofing utilities, and relocation. The grant program focuses on the riskiest properties that have seen repeated flooding as these properties are responsible for a disproportionate share of claims. More funds could be appropriated for mitigation of these properties. Additionally, FEMA has other hazard mitigation grant programs that fund projects for multiple perils, including floods.

At a community level, FEMA has minimum floodplain regulations that all participating communities must adopt. These generally require that new development in SFHAs obtain a permit and be raised above the BFE. There are places for possible improvement in these. For instance, new maps designate coastal A zones—A zones behind V zones in coastal communities that are subject to breaking waves of 1 to 3 feet. Currently, they face the same minimum building regulations and the same rates as inland A zones subject to no waves at all. FEMA could consider building regulations (and possibly pricing) in coastal A zones to better reflect the possibility of wave action. Some communities do this on their own voluntarily already.

FEMA also offers policyholders in SFHAs up to \$30,000 to bring their home into compliance with current building codes through Increased Cost of Compliance (ICC) coverage. This is available to homes substantially damaged (with losses of more than 50 percent of the home value) by a flood or for repetitive loss properties. ICC covers elevation above BFE, relocation, demolition, and flood-proofing (for non-residential structures).

Finally, the NFIP also incentivizes communities to take additional actions through the Community Rating System (CRS). The CRS is a voluntary program established in 1990. As communities undertake actions that reduce risk, they accrue points. Actions are grouped into four categories: (1) public information; (2) mapping and regulation, (3) flood damage reduction,

and (4) flood preparedness. At certain point thresholds, communities change classes, moving down a scale from a Class 10 to a Class 1. At each new class, community residents in the SFHA get an additional 5 percent reduction on their NFIP premium, up to a maximum 45 percent reduction. Outside the SFHA, there is a 5 percent reduction in premiums for residents in the first few classes and a 10 percent reduction beyond those. As of 2014, only 5 percent of NFIP communities participated in the CRS, but they covered over 67 percent of all policies in force.<sup>3</sup> Only 5 communities nationwide have attained the highest two classes: Roseville, California; Tulsa, Oklahoma; King County, Washington; Pierce County, Washington; and Fort Collins, Colorado.

## Conclusion

Over the last five decades, there have been many changes in our ability to model, communicate, and transfer disaster risk—including radical changes in our technology and data. The 48 years that the NFIP has been in operation have also created a history to learn from and use in upgrading and reforming the program. The long program history, though, has also created path dependency and the NFIP now needs to be modernized in light of the transformations and improvements we have seen, particularly when it comes to technology, modeling, and data. As the program looks to reauthorization in 2017, there are a number of reforms Congress should consider, including the following priorities:

- Appropriating funds to upgrade NFIP data systems
- Appropriating funds for continued map updating
- Beginning the process of developing property-specific risk information and rating
- Transforming grandfathering to be a slow glide path to risk-based rates, not a permanent discount on premiums
- Forgiving the current debt while adopting structures to improve financial soundness of program
- Providing non-regulatory maps on future flood risk

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<sup>3</sup> Federal Emergency Management Agency (FEMA) 2014. Community Rating System fact sheet. Washington, DC: Federal Insurance and Mitigation Administration, March.

## Further Reading

- Kousky, C., and L. Shabman. 2016. "Is Flood Insurance Too Expensive?" *The Hill*. December 8. <http://thehill.com/blogs/congress-blog/economy-budget/309347-is-flood-insurance-too-expensive>
- Kousky, C., and E. Michel-Kerjan. 2015. "Examining Flood Insurance Claims in the United States." *Journal of Risk and Insurance*. DOI: 10.1111/jori.12106.
- Kousky, C., L. Shabman, and B. Lingle. 2016. NFIP Premiums for Single Family Residential Properties: Today and Tomorrow. Policy brief 16-10. Washington, DC: Resources for the Future.
- National Research Council. 2015. *Affordability of National Flood Insurance Premiums: Report 1*. Washington, DC: National Academies Press,
- Federal Emergency Management Agency. 2015. *Report to Congress on Reinsuring NFIP Insurance Risk and Options for Privatizing the NFIP*. Washington DC: National Flood Insurance Program, Federal Emergency Management Agency.
- Technical Mapping Advisory Council. 2015. *Future Conditions Risk Assessment and Modeling*. December.